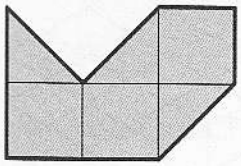
A Metric Units

A metric unit for measuring small areas is a square with sides of one centimetre. We call this unit a square centimetre. Notation : cm^2.

Example : Work out the area and perimeter of this shape.



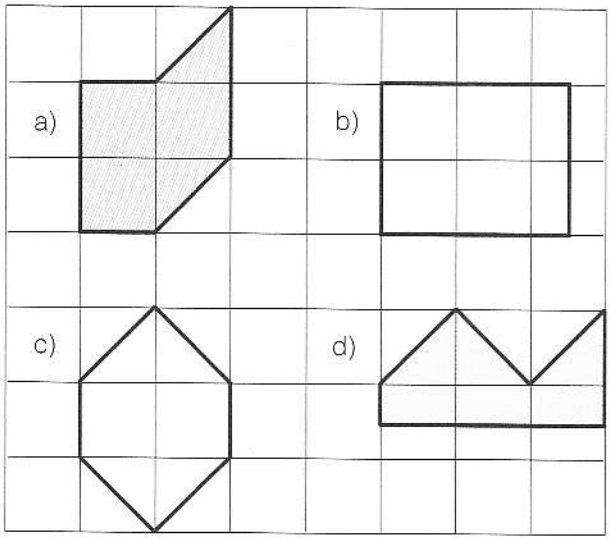
Working : There are 3 whole squares and 3 half squares

Area = $4\frac{1}{2}$ cm^2.

For the perimeter we measure the sloped sides to be 1.4 cm. There are three sloped sides and 6 lots of 1 cm.

Perimeter = 6 x 1 + 3 x 1.4 = 10.2 cm

1 Work out area (A) and perimeter (P) of these four shapes.



a) A = ... b) A = ...

P = ... P = ...

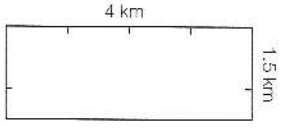
c) A = ... d) A = ...

P = ... P = ...

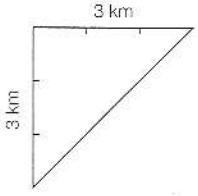
A metric unit for measuring large areas is square kilometres (km^2).

2 Calculate the area of these parks.

a)



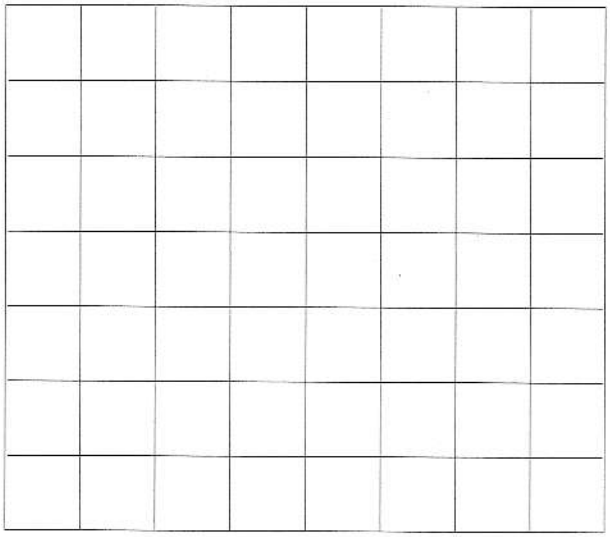
b)



A = ... A = ...

B Same Area

1a) Draw neat diagrams of 4 different shapes, each with an area of 5 cm^2.

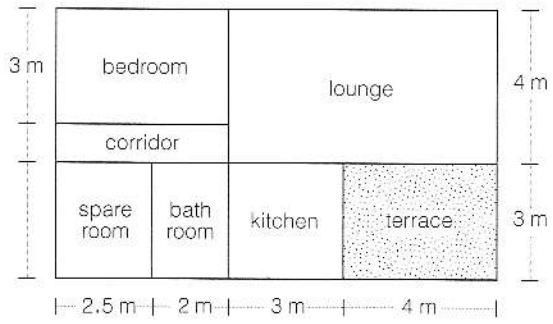


b) Do all your shapes have the same perimeter? .....
If not, colour the shape with the largest perimeter red.

2 Below is a plan of Gran's flat.

a) Complete : All measurements are in metres, therefore the unit for perimeter of a room is .....

and the unit for the area of a room is .....



b) Calculate the area of the lounge. .....

c) Calculate the perimeter of the spare room.

.....

d) Calculate the area of the bedroom.

.....

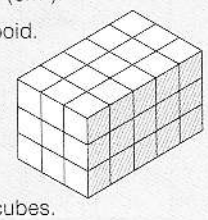
e) How wide is the corridor? .....

62 Volume

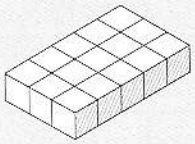
A Counting Cubes

The volume of a solid is the amount of 3 dimensional space the solid occupies. This amount of 3D space is measured in cubes, e.g. cubic centimetres (cm^3).

Example : Work out the volume of this cuboid.



top layer



Working :

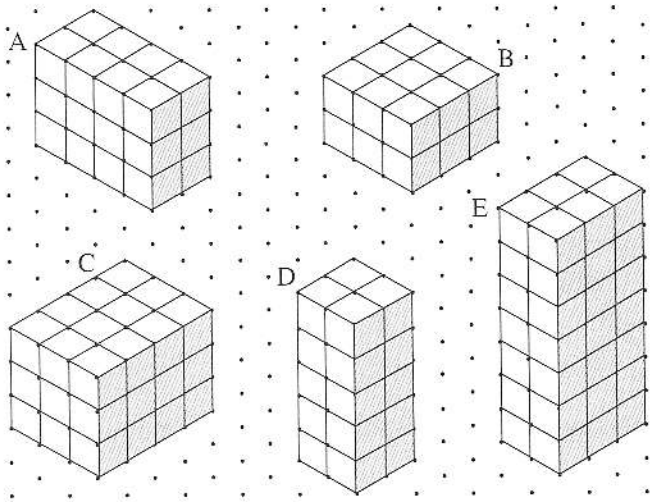
There are 15 cubes on the top layer.

There are 3 layers.

In total 3 x 15 = 45 cubes.

Volume = 45 cm^3

1 Each small cube represents 1 cubic centimetre (1 cm^3).

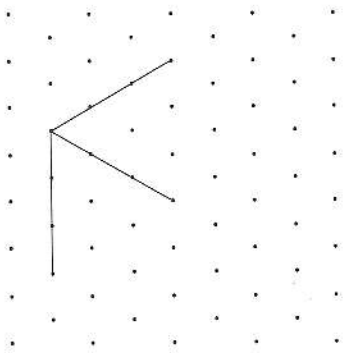


Fill in this table for the cuboids above.

cuboid	cubes per layer	number of layers	volume
A	8		cm^3
B			
C			
D			
E			

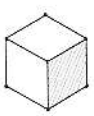
2 Use the isometric dot paper to finish the drawing of a cube with edges of 3 units.

Show the little cubes in it. Shade one face.



B Do It Yourself

Use the given clues to draw neat diagrams of cuboids.



scale

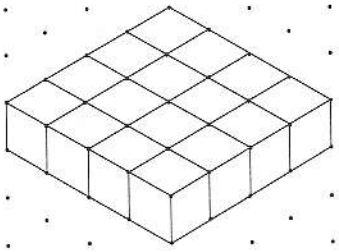
= 1 cm^3

1 This is the top layer of a *cube*.

a) Finish the picture of the cube.

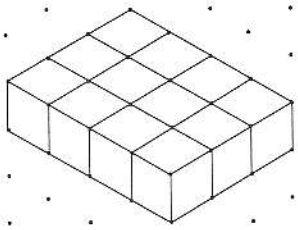
b) What is its volume?

.....



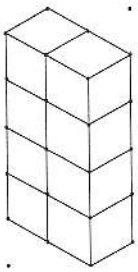
2 This is the top layer of a cuboid with volume 36 cm^3.

Finish the cuboid.



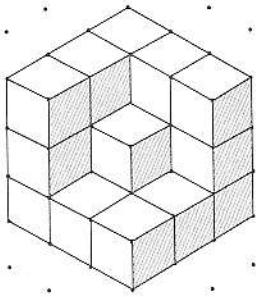
3 This is the side of a cuboid with volume 40 cm^3.

Finish the cuboid.



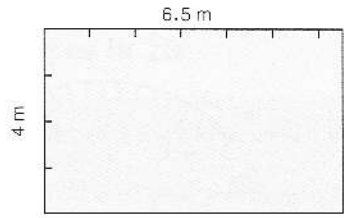
4 Sometimes your eyes play tricks. This diagram shows the same cube you drew in A 2 with a chunk taken out from the top front corner. Can you see it? How many cubes were taken away?

..... cubes.



A Handy Work

1



This is a diagram of Harry's living room.

a) Calculate the floor area. ..... m^2.

b) New carpet costs \$35 per m^2. How much does it cost to carpet Harry's living room? .....

2 Harry needs paint. Paint comes in three different tin sizes.

a) A one litre tin costs \$15.00. That is ..... *\$15* ..... per litre.

A four litre tin costs \$42.00. That is ..... per litre.

A ten litre tin costs \$96.70. That is ..... per litre.

b) Harry needs 7 L of paint. What is the cheapest option of buying the paint he needs?

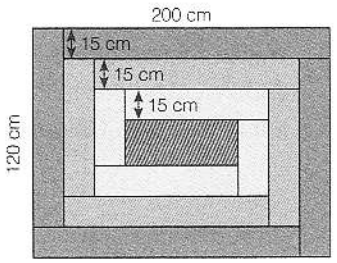
.....

.....

c) One litre of paint covers 16 m^2 with one coat. Harry paints everything with 2 coats. How many square metres can he paint twice with 7 L of paint? .....

.....

3 Gran started this quilt with the grey rectangle in the middle. She sewed three borders, each 15 cm wide around it. The completed quilt measured 200 cm by 120 cm.



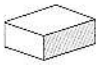
a) What is the length and width of the grey rectangle? .....

.....

b) Calculate the perimeter of the grey rectangle. .....

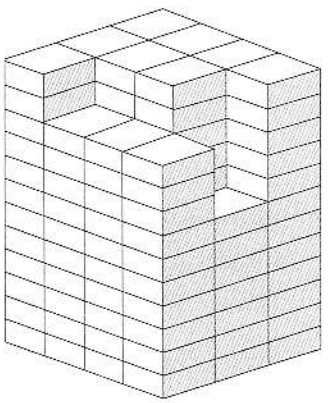
B Stacks of Paper

1



one ream = 500 sheets

Paper for computer printers and photocopying machines is sold in reams of 500 sheets. This stack of reams sits in the corner of a stationery shop. Originally the stack was a cuboid 3 reams long, 4 reams wide and 12 reams high.



a) How many reams were in the original stack? .....

.....

b) How many reams have been sold? .....

c) How many reams are still in this stack? .....

d) How many sheets of paper are still in the stack? .....

.....